

THE ORNITHOLOGICAL STATION AT HELIGOLAND.

A SHORT ACCOUNT AND SOME REFLECTIONS.

BY

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(With four plates and a diagram)

The rock-island of Heligoland lies in the North Sea off the mouths of the Elbe and the Weser, about 28 miles from the nearest point on the mainland. About half a mile to the south-east is the Dünen-Insel, or 'Dune Island', whose gently sloping beaches have made it such a popular sea-bathing resort that during the months from June to September, the population of Heligoland, normally about 2,000, swells up to 20,000 or more.

Dünen-Insel was connected with the main island till about the year 1720 when a violent irruption of the sea submerged the intervening neck.

In Summer, when the tide of visitors is at its flood, there is regular daily communication with the island by means of fast and luxurious passenger ships run by the Hamburg-Amerika Line, which take the pleasure-seeker across from Hamburg in six hours.

The main island is a barren rock, roughly triangular in shape, standing out of the sea with sheer rocky sides, about 200 feet in height, of a striking red colour. The top, or *Oberland* as it is called, is a beautiful grass-covered, green and undulating plain, broken up here and there by potato cultivation—one of the scanty natural products of the island. The red crags, the verdant *Oberland* and the shimmering white foam as the breakers dash against the foot of the rock, are said to have inspired the colours of the Heligoland flag which continue to-day as red, white and green. Philatelists will recall that these same colours also appeared on the much-prized old Heligoland stamps.

As recently as 1890, Heligoland was a British possession, having been acquired from Denmark in 1814. It was handed over to Germany in exchange for Zanzibar, which thenceforward became a British Protectorate. Before the Armistice, the rock was heavily fortified and bristling on all sides with guns of large calibre. It boasted of a magnificent harbour capable of affording refuge and fuelling to the largest battleships, and during the Great War the island played a most effective role in guarding the mouths of the Elbe and the Weser—the keys to Germany—against the British navy.

The natives of Heligoland speak Frisian and a form of German known as Platt-Deutsch, both thoroughly unintelligible to most foreigners and Germans alike. Many of the older inhabitants, however, have not forgotten their English yet and never miss an opportunity of showing off their linguistic attainments.

The total length of the island is about a mile, and at its widest it

is about 500 yards. Its situation relative to the routes of birds migrating southwards in Autumn from Norway, Denmark and the regions of the bleak North to escape the rigours of winter, and back to their homes in Spring, make Heligoland particularly suitable for the study of bird migration. In spite of the vast amount of data that has been accumulated in recent years, and is still accumulating, it has to be admitted that a great many of the essential psychological aspects involved in the phenomenon, continue to remain a mystery. Besides its natural situation, one of the many special advantages the island possesses for a study of this phase of bird life, is the scarcity on the rock of natural tree and shrub growth. Moreover, the fact that the resident bird-life is scanty, both as regards species and individuals, obviates the possibility of confusion and error in regard to the status of birds which arrive on the island from time to time and stop over for a day or two before resuming their journey.

The alarming amount of erosion from the sea, that has taken place in recent years, and still continues to be a menace to the existence of the island, has necessitated the building of a heavy protecting wall of stone, brought in from abroad, along practically the entire length of the western side.

This wall incidentally has become a great convenience to local sportsmen, who take their stanch along it, at short distances from one another, throughout the livelong day. Ever on the alert, these local Tartarins let off a regular fusillade whenever some poor unfortunate bird happens to show itself over the western cliff. The species does not matter in the least; fresh meat is a rare luxury on Heligoland, and thrushes, blackbirds or sparrow-hawks contribute equally towards the deficiency. Many a ringed bird finds its death at the hands of these merciless gunners, and not infrequently within a few minutes after its release from the *Volgchwarte*, as the ornithological station is called.

One particular cliff on the western side between the northern end of the sea-wall and that curious detached needle of rock known as 'Lange Anna,' is the nesting site of a colony of *Lummen* (Guillemots) which are now recognized as a distinct race of *Uria aalge*, namely *helgolandica* Lönnberg. It is remarkable that out of the great stretch of seemingly identical cliffs and ledges forming the precipitous sides of the island, the birds should select just this one portion which is persistently occupied for nesting purposes, year after year. It forms an isolated colony, the only one within a radius of 500 miles, and incidentally also the only one of its kind in the whole of Germany. The birds occupy the cliffs only a few months during the year, chiefly from mid-April to the second half of July. Through the ringing method it has been ascertained that during the rest of the year they wander about mostly on the Norwegian and Scandinavian coasts, and have also been met with in the south-east portion of the North Sea. Some numbers suddenly appear at Heligoland in the winter months from time to time, and vanish again in a few days. The members of the colony do not hold together after breeding is over and roam about in smaller or larger flocks, sometimes even in pairs, the individuals often straying much apart.



Photo.

HELIGOLAND FROM THE SEA.

F. Schensky.



Photo.

by Author.

ON THE BEACH, DÜNEN ISLAND (Heligoland in the background).

In the foreground are waders of various species, Black-tailed Godwit (*Limosa limosa*), Sanderling (*Crocethia alba*), Dunlin (*Erolia alpina*), Ringed Plover (*Charadrius hiaticulus*), etc. (The black mass between the birds and the sea is a brown Alga, producing Iodine, vast quantities of which are cast ashore.)



Photo.

“ Lange Anna ”—a feature of Heligoland.

by Author.



Photo.

A general view of the Sapskuhle or Trapping Garden, showing dense vegetation.

by Author.

In addition to the abrupt height of the rock, which stands out at once as a landmark and a haven of rest to the weary wayfarers of the air, Heligoland possesses a powerful lighthouse whose beams (forty-two million candle power) seem to exercise an irresistible attraction on the journeying multitudes on moonless overcast nights.

By virtue of all these favourable conditions, Heligoland has long been recognized as an ideal place for the study of bird movements. Heinrich Gätke, primarily a landscape painter, lived on the island in the last century for a number of years and carried out the pioneer observations and investigations that have made him so famous. It was his monumental work *Heligoland as an Ornithological Station* which, in spite of its somewhat fanciful theories and conclusions, paved the way to a realization of the importance of this type of research. When Heligoland became a German possession the Prussian Government established a Biological Station on the island. Though principally an institution for the purpose of marine research, one or the other of its Zoological staff, in addition to his own duties, continued the investigations started by Gätke after the latter's death in 1897. Dr. Hugo Weigold needs special mention; he took up the thread of Gätke's experiments, and the work under him was carried on with greater exactitude and scientific precision. Dr. Weigold experimented with various devices in the *Sapskuhle* which was a sort of Botanical Experimental Garden (at the northern end of the Oberland) for catching birds for marking purposes, and the existing elaborate trapping arrangements are in a great measure due to his ingenuity and initiative.

In connection with the Biological Station at Heligoland, was started the wonderful little aquarium which now contains such a comprehensive collection of the marine fauna of the North Sea. The station is also responsible for the North Sea Museum, which, besides Marine Zoology, contains the valuable ornithological collections made by Gätke during his residence on the island, and also those brought together later by Dr. Weigold and by the present Director of the Vogelwarte.

In September 1929, I was fortunate enough to spend a fortnight on Heligoland, and was there as much impressed by the methods and thoroughness with which investigations are carried on, as by the facilities always afforded so willingly to students of ornithology. I myself am greatly indebted to the hospitality and kindness extended to me by the keeper of the station, Dr. Rüdolf Drost, which made my visit so interesting and instructive.

Observations at the *Vogelwarte* are carried on throughout the year by day, and also occasionally by night when conditions are suitable. Careful data are recorded from day to day as regards temperature, prevailing winds, and other climatic and physical changes or disturbances, which are all subsequently co-ordinated by means of graphs and charts, and their reaction on bird movements set out in an efficient and comprehensible manner. A number of live birds are kept in an aviary for various psychological and physiological experiments and also for use as decoys. There is a good ornithological library for the use of workers and students, and a complete reference

collection of the birds met with on the island as residents, regular passage migrants or rare stragglers. During the time I was there, the rooms were frequented by a number of enthusiastic students from Germany and other European countries, and this, I understand, is the usual state of affairs in Spring and Autumn when bird migration takes place over the island.

Of recent years the *Vogelwarte* has been chiefly concerned with the marking of birds with aluminium rings. Apart from the banding work that is actually done at the station, the *Vogelwarte* has a number of collaborators on the mainland, including four well-organized affiliated marking stations, and the magnitude of its activities as a whole can be gauged from the fact that in the year 1927 alone, no less than 28,478 birds, comprising some 200 species, were marked with the rings of the station. Over 5,000 of these were put on by the *Vogelwarte* itself, while the balance was used by collaborators in various parts of Germany, mostly on nestlings. The figures for 1928 and 1929 are considerably higher, and it is expected that 1930 would show a further improvement.

A large percentage of the birds ringed on the island is captured at the lighthouse. When the nights in Spring and Autumn suddenly become overcast, as frequently happens by wind-blown clouds, the sky over Heligoland resounds with the cries of countless wanderers, who, apparently bewildered in their direction, fly low and are drawn to the beams of the lighthouse as irresistibly as filings to a magnet. It is a remarkable fact that the beams fail completely to attract the birds so long as there are any gaps at all in the clouds through which stars are visible, a fact which makes one wonder if the correct orientation is determined by the stars as by mariners of old! On a really favourable night, as many as 1,200 or more birds may be secured at the light. This, at Heligoland, furnishes practically the only opportunity of obtaining shore birds such as Golden Plovers, Lapwings, Sandpipers, etc., for ringing purposes. In the ordinary course of events, though some numbers do stop over on the Düne, where they are caught with nets and decoys, the majority pass over to the coasts of the mainland which lie only a few miles further. The difficulty otherwise invariably experienced in catching adult *Charadriidae* for marking in sufficiently large numbers, is thus easily compensated for by occurrence of the requisite type of weather, and the *Vogelwarte* looks forward to it eagerly.

A successful night (unfortunately I missed this during my visit) is graphically described by Gätke, and his description gives some idea of the joy it must occasion in the heart of an ornithologist. 'The whole sky' he writes, 'is now filled with a babel of hundreds of thousands of voices, and, as we approach the lighthouse, there presents itself to the eye a scene which more than confirms the experience of the ear. Under the intense glare of the light, swarms of Larks, Starlings and Thrushes career around in ever-varying density; like showers of brilliant sparks or huge snow-flakes driven onward by a gale, and continuously replaced as they disappear by freshly arrived multitudes. Mingled with these birds are large numbers of Golden Plovers, Lapwings, Curlews and Sandpipers. Now and again too a Woodcock is seen; or an Owl, with slow-



Photo.

by Author.

Dr. Drost removing trapped birds from Trap No. 1.



Photo.

by Author.

Dr. E. Stresemann at Trap No. 3.
(Note more elaborate box.)

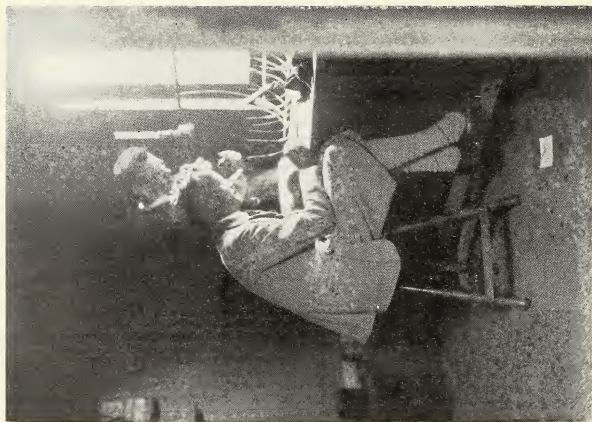


Photo.

by Author.
Ringing in progress at the Sapskühle. (On the curved wires near the window are threaded rings of various sizes handy for use.)



Photo.

by Author.
A ringed Sparrow-hawk (*Accipiter nisus nisus*) ready to be released.

beating wings, emerges from the darkness into the circle of light, but again speedily vanishes, accompanied by the plaintive cry of an unhappy Thrush that has become its prey'.

Under the necessary meteorological conditions, the birds arrive at the lighthouse at practically all hours after dark, the stream frequently continuing unbroken throughout the night. They dash against the panes of glass around the lantern and fall dazed on the balcony surrounding the turret, while some may even be killed outright by the impact. A great many flutter to the ground below, and such are their numbers that for yards around the base of the tower the meadows are just pulsating with life. At the *Vogelwarte* night is transformed into day, the whole establishment turns out in force with lanterns and gunny sacks which soon bulge with quivering masses of migratory fowl. The inhabitants of Heligoland also sally forth to replenish their larders, while the cats, which like the pariah dogs of pre-war Constantinople, are a feature of the island, likewise appear on the scene in their numbers, taking heavy toll of the weaklings and wearied-out travellers resting in the fields. For superstitious reasons, the inhabitants of Heligoland assiduously protect the feline population, and though the hand of the *Vogelwarte* is incessantly up against this veritable plague, diplomacy forbids their causing the creatures any harm in broad daylight. Migration nights, while Heligoland is mostly asleep, therefore, are the only occasions when ornithologists and cats may meet each other on an equal footing, and on such do the former seize the long-awaited opportunity of avenging the murder of so many innocents. Though I hesitate to make a general statement such as may involve me in libel proceedings, I am acquainted with at least one youthful bird enthusiast at whose hands many a sneaking bird-snatcher has met his sudden and violent end. His procedure was simple enough; he grabbed the cats by the scruff of their necks and just let them down over the precipice into the dashing waves in a most matter-of-fact sort of way. The sun rose next morning on so many cats the fewer; none-the-wiser Heligolandians continued in blissful ignorance!

The sacks are conveyed to the *Vogelwarte* office; each bird is properly identified and marked with a ring of appropriate size. When the number of birds is not too great to permit such detailed attention, each individual is also carefully weighed and its age, as far as possible, determined. The relative particulars are then carefully noted on the necessary forms and registers and the birds are released.

So much for work at the lighthouse which, clearly, can provide birds only once in a way. In addition, the *Vogelwarte* has a special trapping garden—the *Sapskuhle*, reference to which has already been made—where smaller birds, mostly passerine (but also often Sparrow-hawks, Woodpeckers, and even Woodcock) are caught in cleverly constructed wire-netting traps which insure the minimum of accidents to the birds. Owing to the heavy gales which continually sweep over the island, there is practically no natural tree-growth on the *Oberland*. Trees and shrubs being a desideratum for attracting birds, the *Vogelwarte* decided to utilize the old experimental Botanical garden for the purpose. The site of this garden is a